SIEMENS

MULTIMOBIL 2.5

SP

Installation Instructions

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English
Print No.: SPR8-X01.812.01.02.02
Doc. Gen. Date: 09.05
Replaces: SPR8-X01.812.01.01.02

Multimobil 2.5

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Installation Instructions

Version: 6.0

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2 Installation Instructions

2.1 Safety Precautions

It shall be the duty of the installation personnel and the user to ensure that all the safety measures concerning the unit operation and installation are adhered to.

The unit must be checked for the status of its safety measures at least every year or any time desired by the user, not exceeding one year.

However, we recommend in the interest of the safety of the patient, the user, and other personnel to have a yearly drill on operational safety.

If there are any special regulations of the hospital/institute, to be followed over and above the general safety regulations pertaining to the installation, the same must be ensured.

Before commencing the operation, the user must convince himself/herself all safety aspects and their proper functioning. He should also ascertain that all displays and indicators are functioning as described.

The radiation indication lamp should light only when the exposure is released. In case the lamp lights in any other condition, the unit should be immediately switched off and SIEMENS SERVICE DEPARTMENT should be informed.

Any change / or replacement in the unit must be carried out by the manufacturer or a person authorised by manufacturer ONLY. The record of such work must be maintained clearly at the site.

Before working on the unit ensure that the Mains is switched OFF.
For completely safe working remove mains plug.

The unit must be OFF before removing or putting back the assemblies.

The protective earthing of subassemblies must not be removed in any case.

2.2 Overload Protection

The unit is designed to work on 190 – 240V,50Hz 15A socket. For safety purposes 16A HRC fuses are provided which will blow when a current exceeding 16A sustains for its response time.

CAUTION

Ensure that the mains socket is properly earthed.

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In case of fault, if the kV tries to build beyond the safe limit of X-ray tube the protection circuit blocks the HT.
In case of fault, if the Filament current tries to increase beyond the safe limit the protection circuit blocks filament boosting.

2.3 Radiation Protection

Do not put any part of your body in the direct line of radiation.
Collimate the X-ray beam.
Keep maximum possible distance from the object being radiographed. For this make the best use of 5 m of recoilable exposure release switch.

Wear protective clothing.

Monitor radiation received using the personal TLD-badges or pen-dosimeter.

2.4 Mechanical Saftey

Before releasing arm assembly from its locking position, ensure that the single tank assembly along with covers, yoke and collimator is in the original position.
In case a difficulty is encountered in releasing the lock, any adjustments or alignments must be done with complete single tank assembly in the locked position only.

CAUTION **Do not attempt to release the lock by any other means.**

The arm will not be counter-balanced if any of the single tank assembly parts like cover are removed.
Any detection of physical damage of single tank assembly or breaking or loosening of its parts (except handles) indicates possible danger of upward force, the order of 25kg, when the arm is released from its locked position. In such a situation, it is recommended to suspend the installation and contact FACTORY for further clarification.

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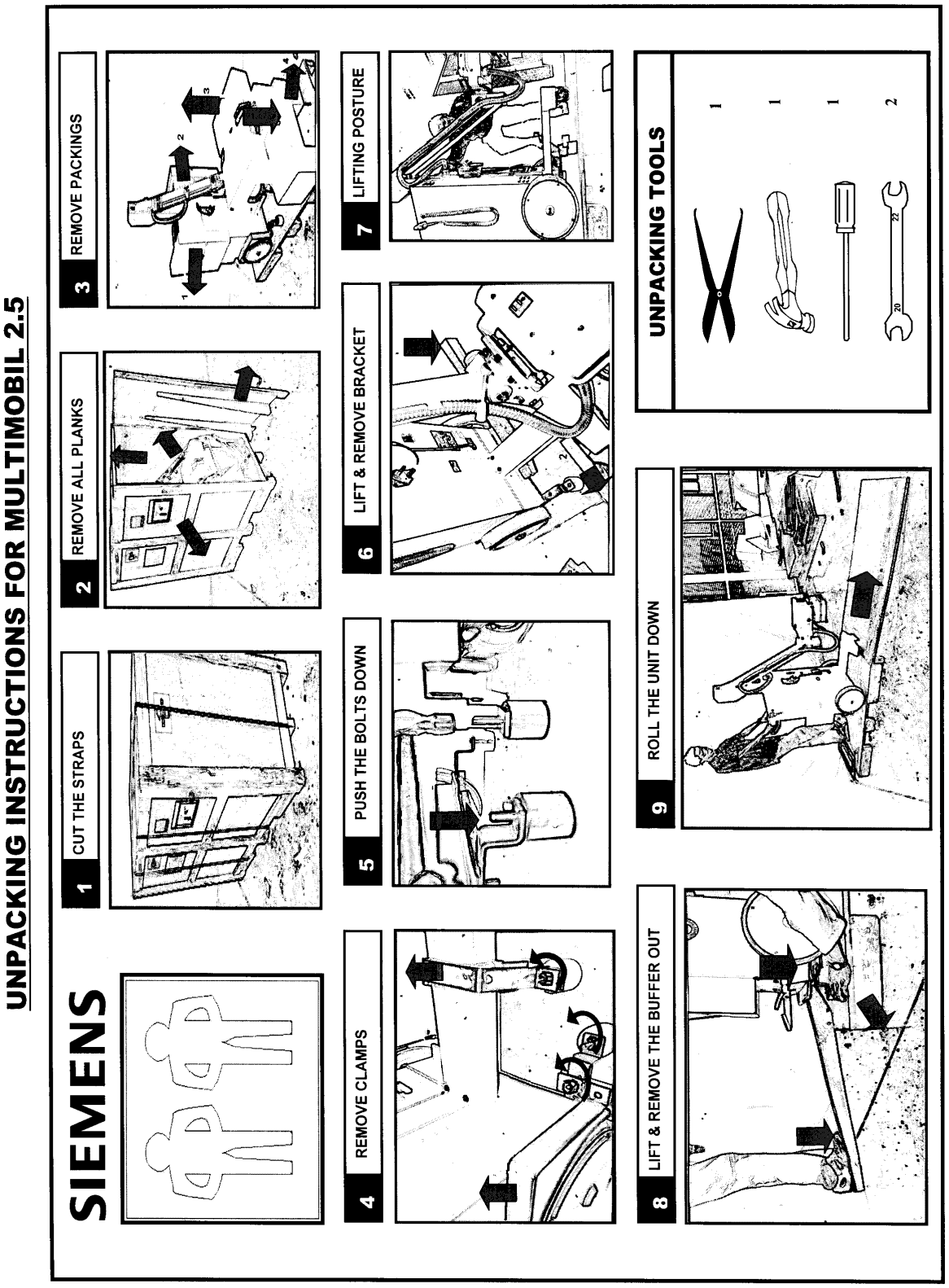
2.5 UNPACKING



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After opening the case, locking arrangement of rear wheels must be checked before the safety blocks are removed.
The complete system must be inspected for physical damage and / or material shortfall and factory must be informed accordingly

2.6 Transport and Positioning of Unit

Refer corresponding section on Transporting the Unit and Positioning for Exposures in the Operating Instructions.

2.7 Preliminary Check

2.7.1 Mains

1. Check available mains voltage at the site.
2. Check if the mains voltage is within nominal range of 190 – 240V ac.
3. Check if the Mains resistance is ≤ 1.5 Ω.

2.7.2 Interconnections

Type	Description	Specifications
Mains	1 Mains Cable	3 x 1.5 mm sq.
Control to single Tank		
	HT Cables U & V	2.5 mm sq. Yellow
	Filament cables 12 & Y	2 Core shielded PVC insulated
	Collimator Cable	2 Core 1 mm sq. Grey
	Earth Cable	6 mm sq. Yellow-Green
	kV feedback Cable	2 Core shielded PVC insulated
	Ground Wire (X)	1.5 mm sq. Yellow
Interconnections	D915.X20 to D920.X20	20p FRC
	D915.X10 to D920.X10	26p FRC
	D915.X11 to D920.X11	16p FRC
	D915.X12 to D936.X12	14p FRC
	D915.J24 to D932.X1	28p DIP FRC
	D915.X8 to D920.X8	10p Bonded
	D915.X15 to D980.X7	5p Bonded + Earth
	D920.X6 to D61.X6	D type soldered connections
	D920.X27 to S27	3 Core cable
	D920.X1 to T1 input	Bunch
	D920.X4 to T1 output	Bunch
	D920.X2 to Single Tank	Bunch
	Wire Bunch	

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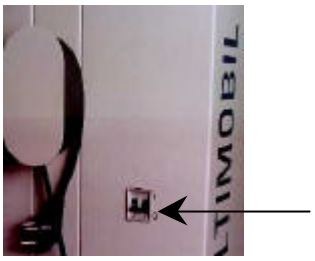
Maximum permissible resistance between the earthing lead terminal in the control and on the HT transformer shall not exceed 0.2 ohms.

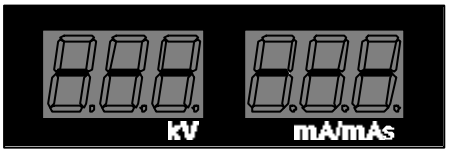
2.7.3 Switching ON



Switch on the MCB to position the control housing.

Switch the Generator ON by actuating momentarily on the overlay of the top panel.

The Display and radiation Indicator light up for 3.5 seconds
In the kV and mAs fields as shown in
Figure for 3.5 seconds.



Then the stable kV and mAs values appear.
9 seconds after that the unit becomes ready for use and the same is indicated by a long Beep at the end of setup.
In case of any errors while setting up / hardware check / stand-by operation, the corresponding Error code will be displayed on the same displays. For troubleshooting of this error refer services Instructions.

NOTICE

The Control Unit contains Non volatile Memory, which retains the last selected kV and mAs. So the initial display after setup will depend on the last settings done.

CAUTION

After the unit is switched on, the capacitors C1/C2/C6/C7/C9 charge to 300VDC. After switching the unit OFF, it takes about 8 minutes for capacitors to discharge. The presence of DC voltage is indicated by Green LED V1 on D61.

2.8 Forming

If the unit is being installed after six months from the date of despatch, the capacitors C1/C2/C6/C7/C9 need forming.

On capacitors V+ and V- maintain only following connections.

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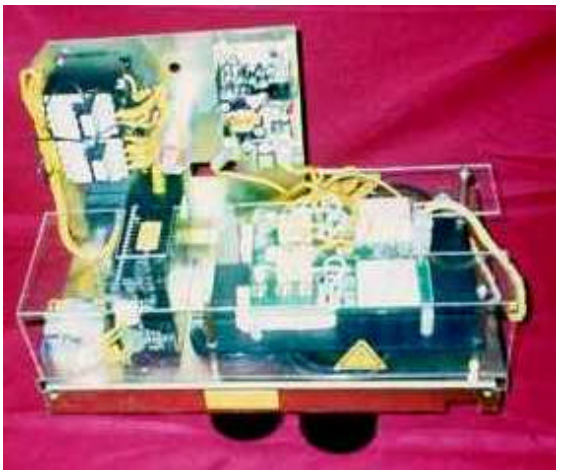
V1+	C1+,C2+,C6+,C7+,C9+*,R3
V1-	C1 -, C2-,C6-,C7-,C9 -*, R3

*C9 Present only if 16000MFD capacitors are used

Connect DC Voltmeter across C+ & C-. Disconnect wires from AC input of rectifier V1. Connect variable power supply 0 - 250V AC to V1 AC input with 1kΩ / 50W resistor in series.
Increase voltage slowly till Vc reads 100V.
Maintain for 15 minutes. Note Vc.
Increase voltage till Vc reads 195V.
Maintain for 10 minutes.
Increase voltage till Vc reads 300V.
Maintain for 10 minutes.



2.9 Collimator

Switch the unit ON
Switch ON the collimator lamp. The collimator lamp will glow for 30 sec ± 5 sec.
Open collimator flaps to the maximum. The light will show square, sharp edges and clear cross wires.
Close the flaps fully. The light field will show a small square.

2.10 Movements

Check arm counterbalancing at all positions.

When the single tank does not remain at the required position, the spring tension should be adjusted for complete balancing.
Refer Troubleshooting instructions for adjustments of spring tension.

WARNING

Use Radiation Protection
Presence of High Tension
Observe Safety Precautions

2.11 Exposure

Switch the generator ON.
Set exposure parameters as 60KV, 10mAs.
Pull the recoilable exposure release switch and release an exposure.
The yellow LED on top panel lights up for a short duration equal to exposure time.
Audible indication by a Buzzer from the control and muffled sound from inverter confirms the working of the inverter.
The LED's on D915 light in the following sequence:

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S27 - STEP1 V22.
Exposure Yellow LED V23.
In case of error Red LED V24 on D915 lights and error code corresponding to the error is displayed.
Sharp knocking sound from inverter indicates inverter short circuit

2.11.1 Timing

Set 40 kV 200mAs.
Release an exposure. The radiation indication LED will light for 5 sec ± 0.5 sec.
Set 90 kV 80mAs
Release an exposure. The radiation indication LED will light for 5 sec ± 0.5 sec.

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